XM 2500 SPOT

DTS

The Lighting Company

User Manual Rel 1.0

GB

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1- TECHNICAL FEATURES

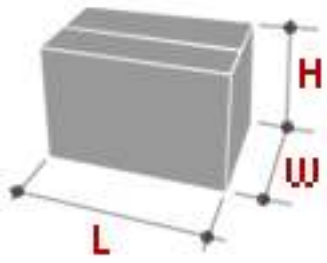
The XM 2500 Spot is fitted with a Philips MSR 1200/SA discharge lamp (GY22 lampholder base), with a colour temperature of 5,600 °K and a luminous flux of 96,000 Lumens.
Duration is 750 hours, with replacement recommended before 1000 hours
Other recommended lamps: Osram HTI 1200W/SE PP; GE Lighting CSR1200W SA

The unit incorporates:
Motorized Focus system
8°-13° motorized Zoom with auto-focus
Dimmer (emitted light is controlled by progressive and linear dimming).
Shutter (instantaneous shutter opening/closure)
Strobe: mechanical strobe effect (frequency variable from 0.86 flashes/sec to 6.6 flashes/sec).
Motorized iris
2 gobo wheels (6 indexable 16 bit gobos + open each)
CMY linear colour mixing system
Colour wheel (7 colours + open)
3 rotating prisms
Frost
Electronic or magnetic ballast
Pan: 540° in 5.6 seconds (8 or 16 bit) with auto repositioning system
Tilt: 270° in 4.3 seconds (8 or 16 bit) with auto repositioning system
USITT Standard DMX 512 input
4-digit LED display with 4 buttons
Power Supply: 190-245 V (50/60 Hz).
Power consumption: 1300 W.
Energy saving function is automatic when the fixture is blacked out.
The XM 2500 SPOT is also available with a magnetic ballast, with selectable power supply (220/230/240 V). Power consumption is 1300 W.
Remote Lamp on/off via DMX
Net weight: 45 Kg (with electronic ballast); 55 Kg (with magnetic ballast).

Packaging Dimensions (LxWxH)
680x680x780mm

Weight: 50 Kg (with electronic ballast)

60 Kg with magnetic ballast



2- IMPORTANT SAFETY INFORMATION

2.1 Fire prevention:

-XM2500 is fitted with a Philips 1200W MSR/SA lamp.
-Other recommended lamps are: Osram HTI 1200W/SE PP; GE Lighting CSR1200W SA
The use of any other alternative lamp is not recommended and will null and void the fixture's warranty.
-Never locate the fixture on any flammable surface.
-Minimum distance from flammable materials: 1 m.
-Minimum distance from the closest illuminable surface: 1 m.
-Replace any blown or damaged fuses only with those of identical value. Refer to the wiring diagram if there is any doubt.
-Connect the projector to mains power via a thermal magnetic circuit breaker.

2.2 Prevention of electric shock:

-High voltage is present inside the unit. Unplug the unit prior to performing any function which involves touching the inside of the moving head, including lamp replacement.
-The level of technology inherent in the XM2500 requires the assistance of specialised personnel for all servicing.Please refer to an authorised D.T.S. service centre.
-A good earth connection is essential for proper functioning of the projector.
-Never connect the unit without proper earth connection.
-The fixture should be located in places with a good air ventilation.

2.3 Protection against ultraviolet radiation:

-Never turn on the lamp if any of the lenses, filters or ABS covering is damaged. Their respective shielding functions will only operate efficiently if they are in perfect working order.
-Never look directly the lamp when it is on.

2.4 Safety:

-The projector should always be installed with bolts, clamps and other tools that are capable of supporting the weight of the unit.
-Always use a second safety chain to sustain the weight of the unit in case of the failure of the main fixing point.
-The external surface of the unit, at various points, may exceed 70°C. Never handle the unit until at least 10 minutes have elapsed since the lamp was turned off.
-Always replace the lamp if any physical damage is evident.
-Never install the fixture in an enclosed area lacking sufficient air flow. The ambient temperature should not exceed 40°C.
-A hot lamp may explode, so always wait for at least 10 minutes prior to attempting to replace the lamp.
-Always wear suitable hand protection when handling the lamp.

2.5 Level of protection against the penetration of solid and liquid matter:

-The projector is classified as an ordinary appliance and its protection level against the penetration of solid and liquid matter is IP 20. XM2500 uses Philips 1200 MSR/SA lamp with GY 22 socket.
The temperature inside the projector can reach 250° C after just 5 minutes, but it can get as high as 350° C. Always check that the lamp is cold before attempting to remove it. In any case, only open the unit 10 minutes after it has been turned off

3- MOUNTING THE LAMPS:

Warning: Switch off the unit before replacing the lamp.

Philips MSR1200/SA	Osram HTI 1200W/SE PP	GE Lighting CSR1200W SA
Power 1200W	Power 1200W	Power 1200W
Luminous flux 96,000 lm	Luminous flux 105,000 lm	Luminous flux 100,000 lm
Colour temperature 5.600°K	Colour temperature 5.400°K	Colour temperature 5.800°K
Lamp base GY 22	Lamp base GY 22	Lamp base GY 22
Rated life 800 hours	Rated life 750 hours	Rated life 750 hours

1) Using a screwdriver, remove the 4 screws (A,B, C,D) (photo 1) which fix the lamp holder.

Photo 1

Photo 2

Photo 3

Photo 4

2) Remove the lamp holder assembly (photo2).
Insert the lamp (photo 3).
The lamp used on XM 2500 is made in quartz glass and should be handled with care. Always follow the instructions supplied in the lamp's packaging. Never touch the glass directly but use the tissue provided in the lamp's packaging. The GY22 lamp socket is not symmetrical.
DO NOT USE UNDUE FORCE ON THE GLASS. In case of difficulty, read again the instructions and repeat the procedure.
3) Replace the lamp assembly and tighten the screws (A,B,C,D) which were previously removed (photo 4).

3.1 Lamp alignment:

Attention: we recommend to align the lamp in the optical system to avoid overheating of the dichroic filters and other components inside the unit.

Photo 5

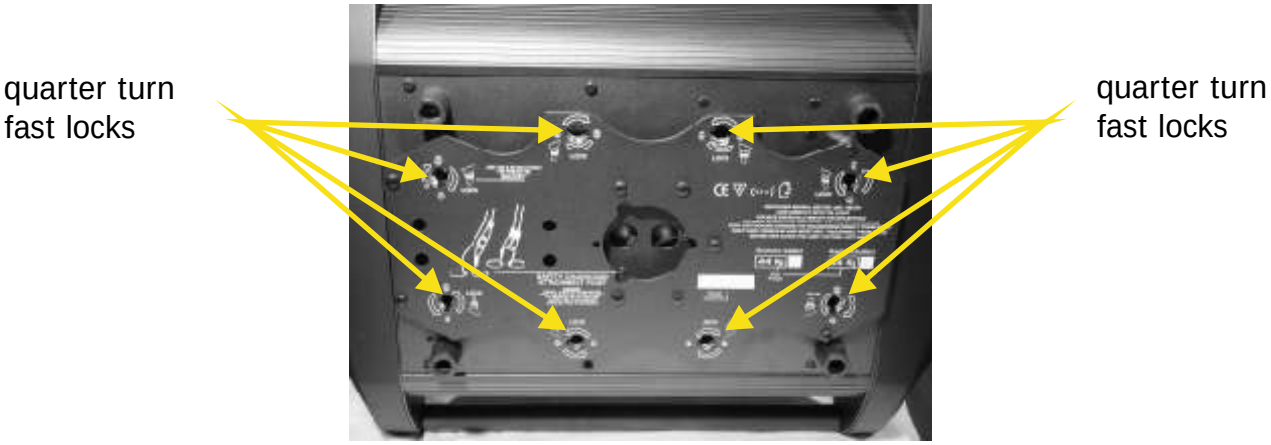
Alignment is carried out using the 3 adjusters X, Y and Z.
During this operation you must have a uniform luminosity all around the projected area.

4- Voltage and frequency

The XM2500 E.B.(ELECTRONIC BALLAST) can operate at 190-245 VOLT 50 or 60 Hz.

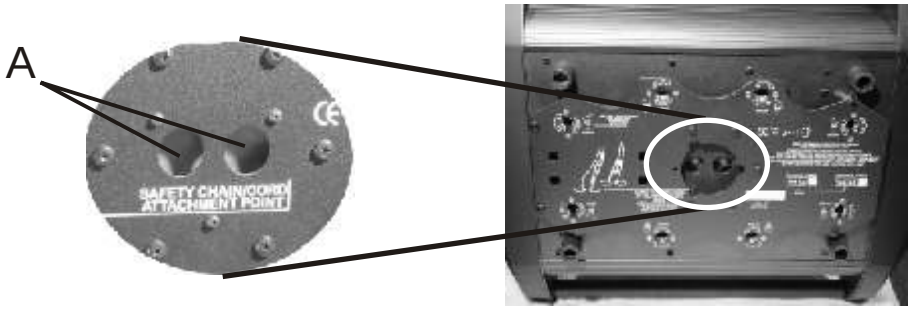
5- Installation

XM2500 may be either floor or ceiling mounted.
For floor mounting installations, the XM2500 is supplied with four rubber mounting feet on the base.
For ceiling mounted installations, we reccomend the use of appropriate clamps to fix the unit to the mounting surface.
The supporting structure from which the unit is hung should be capable of bearing the weight of the unit, as should any clamps used to hang it. The structure should also be sufficiently rigid so as not to move or shake whilst the XM2500 is moving.
Eight quarter-turn fast locks placed on the base of the units allow - by using the two Omega Clamps provided in the box - to fix the unit in any position.
.



Safety chain

We recommend the use of a safety cable or chain connected to the XM2500 and to the suspension truss in order to avoid the fixture accidental fall, should the main fixing point fail. Make sure that the iron cable or chain can bear the weight of the entire unit.
You may attach the safety chain to the two holes (A) located on the base of the fixture, as shown in the picture below.



Protection against liquids

The projector contains electric and electronic components which should under no circumstances come into contact with oil, water or any other liquid. The proper unit functioning would be compromised should this occur.

Movement

The projector has a maximum movement of 540° for Pan and 270° for Tilt. DO NOT place any obstructions in the path of the projector's movement.

Risk of fire

Each fixture produces heat and must be installed in a well-ventilated place. The minimum recommended distance from flammable material is 0.5m.
Minimum distance from the object being illuminated is 2 m.

Forced ventilation

You will note, on inspection, that the unit features various air inlets and cooling fans located on both the base and head of the fixture. These should, under no circumstances, be blocked or obstructed whilst the projector is in operation.
Doing so could cause the fixture to seriously overheat thereby compromising its proper operation.

Ambient temperature

The projector should never be installed in places that lack a constant air flow. The ambient temperature should NOT exceed 40°C.

6- MAINS CONNECTION

XM2500 operates at 190-245V at 50 or 60Hz.
Prior to connecting the unit to your mains supply, ensure that the model in your possession correctly matches the mains supply available. For connection purposes, ensure that your plug is of a suitable rating of 8 amps at 230V.

190-245V 50 / 60Hz

Strict adherence to regulatory norms is strongly recommended.

Protection

The use of a thermal magnetic circuit breaker is recommended for each XM2500.
A good earth connection is essential for the correct operation of the projector.

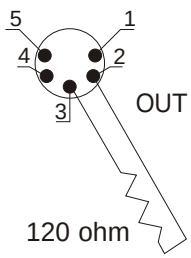
7- DMX signal connection

The unit operates using the digital DMX 512 (1990) signal. Connection between the mixer and the projector or between projectors must be carried out using a two pair screened ø0.5 mm cable and a CANNON XLR 5 or 3 pole connector.

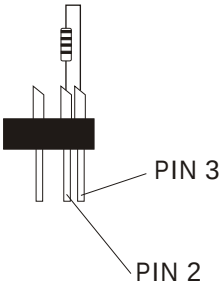
Ensure that the conductors do not touch each other. Do not connect the cable ground to the XLR chassy.
The plug housing must be isolated. Connect the mixer signal to the DMX IN projector plug and connect it to the next projector by connecting the DMX OUT plug on the first projector to the DMX IN plug of the second one.
This way all the projectors are cascade connected.
NB. If the display showing the DMX address flashes, then one of the following errors has occurred:

- DMX signal not present
- DMX address not valid
- DMX reception problem

For Installations where long distance DMX cable connections are needed,we suggest to use a DMX terminator.
The DMX terminator is a male XLR 3-5 pins connector with a 120 ohm resistor between pin 2 and 3.
The DMX terminator must be plugged in the last unit (DMX out panel connector) of the DMX line.



PLACE A 120 OHM RESISTOR BETWEEN PIN 2 AND 3 OF A MALE XRL CONNECTOR AND PLUG IT INTO THE DMX OUT PANEL CONNECTOR OF THE LAST UNIT CONNECTED TO THE DMX LINE



The standard configuration of the XM2500 is with XLR 5 pins connection.
To convert to an XLR 3 pins configuration proceed as follows:
1) Remove the 4 screws fixing the display cover panel to the unit (photo 1).
2) Remove the screws that fix the XLR connectors to the panel (photo 2).
3) Rotate the electronic card by 180° (photo 3).
4) Place the 3 pins XLR connectors in the special holes and close.

Photo 1

Photo 2

Photo 3

DMX Addresses

XM2500 can be used in two different modes: 30 or 18 DMX channels.

If you want to use the XM2500 in 18 channels mode, select the 18 CH mode from the MODE menu and set the following addresses on the mixer:

Projector 1 A001
Projector 2 A019 If you want to select the next projector, just add “18”

Projector 3 A037
….. A….
projector 6 A073

If you want to use the XM2500 in 30 channels mode, select the 30 CH mode from the MODE menu and set the following addresses:

Projector 1 A001
Projector 2 A031 If you want to select the next projector, just add “30”

Projector 3 A061
….. A….
Projector 6 A151

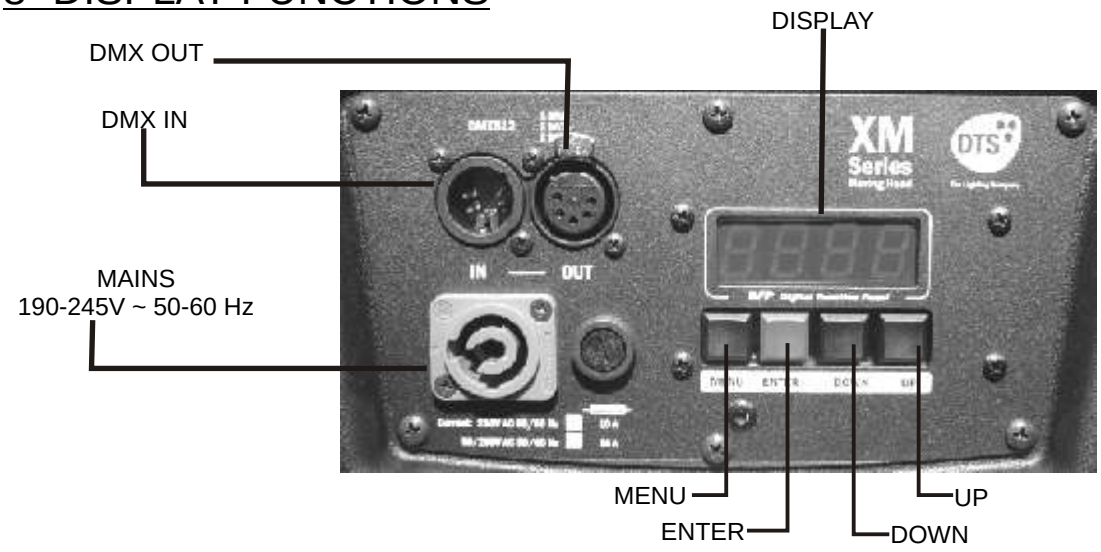
Changing the DMX address

1) Press the UP-DOWN key until you reach the required DMX number. The numbers on the display will start to flash (but the new DMX address hasn't yet been set).
2) Press ENTER to confirm your selection. The numbers on the display will stop flashing and the projector is now controlled by the new DMX address.

TRICKS:
if you keep pushed the UP or DOWN keys, the channels are calculated more quickly and you get a faster selection.

Pushing UP and DOWN keys together,will set the DMX address to channel 001.

8- DISPLAY FUNCTIONS



DISPLAY FUNCTIONS

The XM2500 display panel shows all the available functions . Using these functions, it is possible to change some of the parameters and add some functions. Changing the D.T.S. setting can vary the functions of the unit so that it does not respond to the DMX 512 used to control it. Carefully follow the instructions below before carrying out any variations or selections.
NOTE: the symbol ☞ shows which key has to be pushed to obtain the desired function.

A001 — MENU ☞ Up-Down ☞ **Pdir** — ENTER ☞ Up-Down ☞ **CU** Clockwise ENTER ☞

PAN MOVEMENT INVERSION
To reverse Pan movement from left to right and vice versa on DMX level variation.

Up-Down ☞ **CCU** Counterclockwise ENTER ☞

MENU ☞ Up-Down ☞ **tdir** — ENTER ☞ Up-Down ☞ **CU** Clockwise ENTER ☞

TILT MOVEMENT INVERSION
To reverse Tilt movement from bottom upwards and vice versa on DMX level variation

Up-Down ☞ **CCU** Counterclockwise ENTER ☞

MENU ☞ Up-Down ☞ **diSP** — ENTER ☞ Up-Down ☞ **POSI** — ENTER ☞ Up-Down ☞

- **AA** Floor position ENTER ☞
- **UU** Suspension position ENTER ☞

REVERSE DISPLAY
Reverses display's reading depending on the mounting position
(On the ground or suspended).

Up-Down ☞ **StbY** — ENTER ☞ Up-Down ☞

- **oFF** Display OFF ENTER ☞
- **on** Display always ON ENTER ☞

DISPLAY STAND BY
To turn off the display (after 5 seconds)
Or leave it always on.

MENU ☞ Up-Down ☞ **nOdE** — ENTER ☞ Up-Down ☞

- **30CH** 30 CHANNELS (Pan & Tilt 16 bit) ENTER ☞
- Up-Down ☞ **18CH** 18 CHANNELS (Pan & Tilt 16 bit) ENTER ☞

DMX MODE
To select DMX mode : 30-18 channels

8- DISPLAY FUNCTIONS

MENU Up-Down **tESt** ENTER Up-Down

TEST MODE
Full test and single function test.

- ALL
- PAn
- tI Lt
- dI MM
- SHUt
- I rI S
- GOb1
- GO1.rt
- GO1.SH
- GOb2
- G2.rt
- G2.SH
- EFF
- EF.rt
- CYAn
- MAGE
- YELL
- COLr
- FOCU
- 2ooM

MENU Up-Down **LAMP** ENTER Up-Down

LAMP
Lamp always ON-always OFF
Or lamp ON-OFF selectable via DMX

- dMX — ENTER — ON / OFF VIA DMX (default)
- on — ENTER — FORCED ON
- oFF — ENTER — FORCED OFF

ADJUST
To adjust the lamp with no mixer connected.
It's possible to set the parameters for
PAN-TILT-FOCUS and ZOOM

AdJ ENTER Up-Down

PAn ENTER Up-Down	128	
tI Lt	128	
FOCU	128	
2ooM	128	

SENS
To set ON-OFF the electronic lamp sensor

SEnS ENTER Up-Down

- on — ENTER
- oFF — ENTER

ACC
Lamp strikes counter

ACC ENTER → 10

MENU Up-Down **rESE** ENTER Up-Down

RESET
Al motors reset

- En — RESET ENABLED VIA DMX — ENTER
- dS — RESET DISABLED VIA DMX — ENTER
- rESE — RESET ALL MOTORS — ENTER

MENU Up-Down **dFSE** ENTER → SUrE ENTER

DEFAULT
To restore default setting

MENU Up-Down **FAnS** ENTER Up-Down

Fan control
To control the fan speed .

- 1 — ENTER
- 30 — ENTER — (DEFAULT : 30)

MENU Up-Down **SPEE** ENTER Up-Down

SPEED control
Pan Tilt Speed control.

- 1 — ENTER
- 4 — ENTER — (DEFAULT : 2)

8- DISPLAY FUNCTIONS

MENU Up-Down **SOFt** ENTER Up-Down

SOFTWARE VERSION
Electronic cards software version.

- **d2.00** DISPLAY SOFTWARE (8 MOT PCB N°2)
- **P1.02** PAN-TILT SOFTWARE (PAN-TILT PCB)
- **n1.09** HEAD MOT. SOFTWARE (8 MOT PC N°1)

MENU Up-Down **tEMP** ENTER **50°C**

TEMPERATURE
Head electronic thermic sensor

MENU Up-Down **AFoc** ENTER Up-Down

AUTO FOCUS
Automatic focusing

- **oFF** ENTER AUTOMATIC FOCUS DISABLE
- **on** ENTER AUTOMATIC FOCUS ENABLE

MENU Up-Down **rotG** ENTER Up-Down

GOBO ROTATION
GOBO ROTATION during gobo scrolling

- **oFF** ENTER GOBO ROTATION DISABLE
- **on** ENTER GOBO ROTATION ENABLE

MENU Up-Down **rSUd** ENTER **CodE** Up-Down **100** ENTER Up-Down

RESERVED
Pan lock-Tilt lock
Pan free-Tilt free

PAN LOCK
LOCK THE PAN TO THE DESIRED VALUE

PnLH ENTER Up-Down

- **no** ENTER
- **YES** ENTER Up-Down **128**

TILT LOCK
LOCK THE TILT TO THE DESIRED VALUE

tLLH ENTER Up-Down

- **no** ENTER
- **YES** ENTER Up-Down **128**

PAN FREE
REMOVE POWER TO PAN MOTOR

PnFr ENTER Up-Down

- **no** ENTER
- **YES** ENTER

TILT FREE
REMOVE POWER TO TILT MOTOR

tLFr ENTER Up-Down

- **no** ENTER
- **YES** ENTER

ESC ENTER

MENU Up-Down **tIME** ENTER Up-Down

TIMER
lamp life TIME (reset possible)
and total UNIT LIFE TIME (reset not possible)

- **LAMP** ENTER **4**
- Up-Down **Unit** ENTER **8**
- Up-Down **rESL** ENTER **SUrE** ENTER

9- ERROR MESSAGES

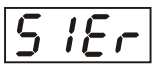
— ERROR: ENCODER PAN

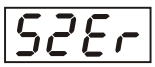
— ERROR: ENCODER TILT

— ERROR: DMX ADDRESS

— ERROR: AUTO MODE INPUT

— ERROR: EEPROM DATA LOADER

 — ERROR: RESET CIRCUIT LINE1 (CMY)

 — ERROR: RESET CIRCUIT LINE2 (GOBO1 , COLOR)

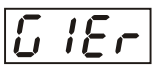
— ERROR: RESET CIRCUIT LINE3 (GOBO2 , FOCUS , ZOOM)

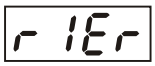
— ERROR: RESET CIRCUIT LINE4 (EFFECTS , IRIS)

— ERROR: MAGENTA POSITION

— ERROR: CYAN POSITION

— ERROR: YELLOW POSITION

 — ERROR: GOBO1 POSITION

 — ERROR: GOBO1 INDEX POSITION

— ERROR: COLOUR WHEEL POSITION

— ERROR: GOBO2 POSITION

— ERROR: GOBO2 INDEX POSITION

— ERROR: ZOOM POSITION

— ERROR: FOCUS POSITION

— ERROR: EFFECT WHEEL POSITION

— ERROR: EFFECT INDEX POSITION

— ERROR: IRIS POSITION

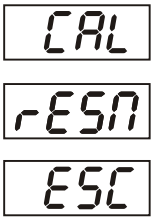
10- HIDDEN MENU

For technical personnel only.

To operate this menu:

-Connect the projector to the DMX controller (DMX SIGNAL MUST BE CORRECTLY RECEIVED)

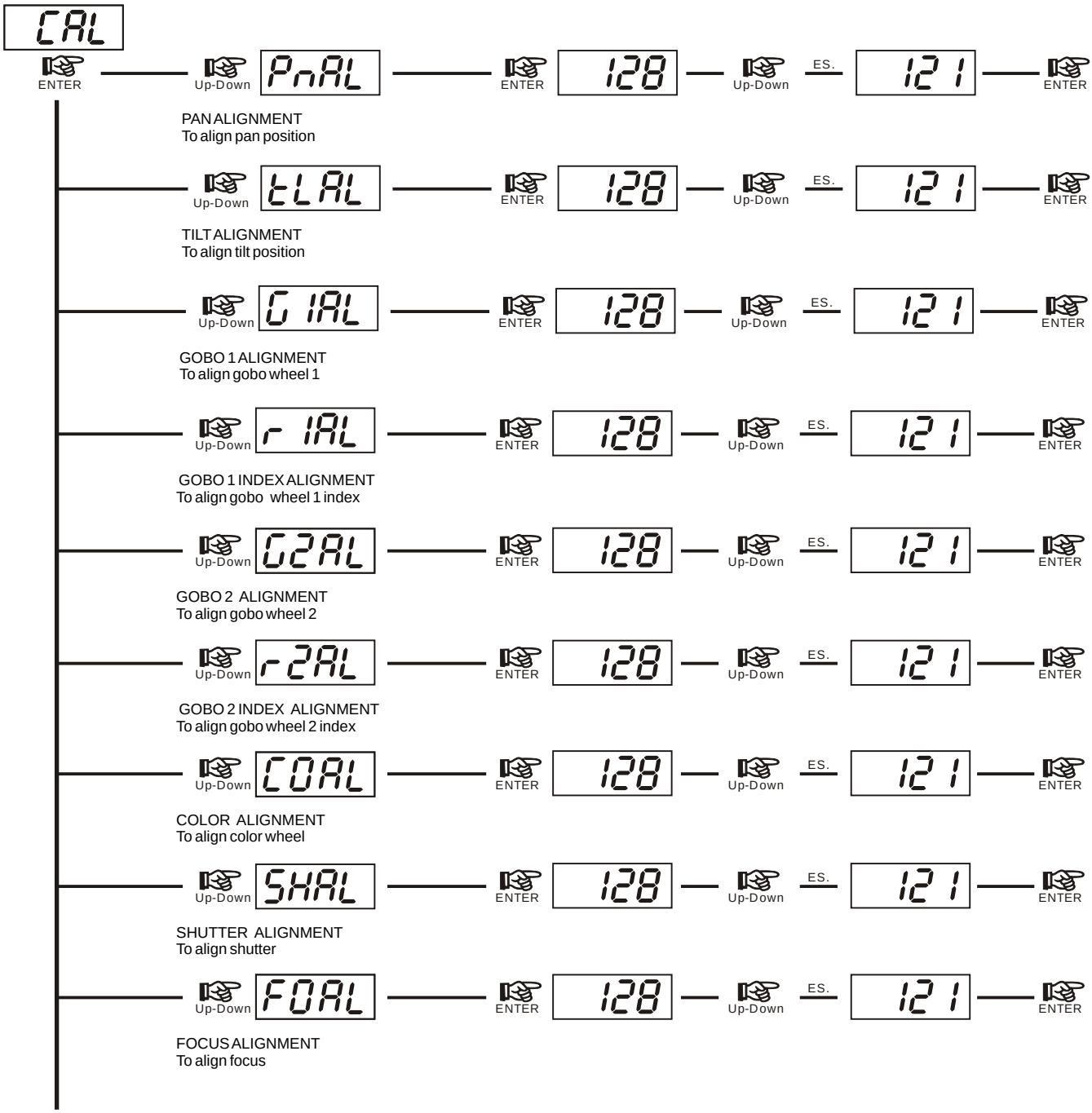
- Reset the XM2500 (reset from the MENU, not from the DMX controller!).
- While reset is running, press the MENU and ENTER keys at the same time.

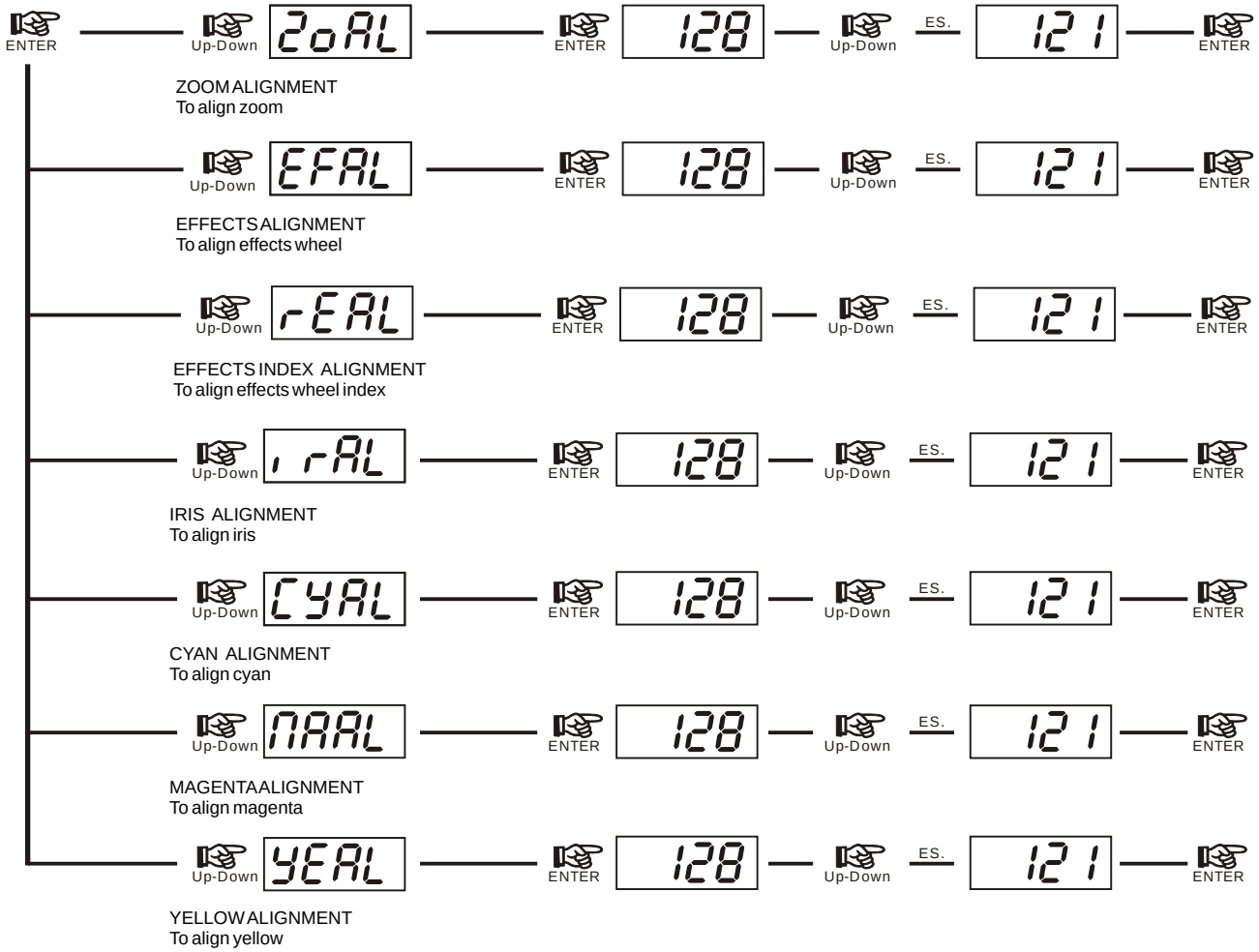


Electronic calibration of the motors.

Reset EEPROM (Reset all settings. ATTENTION: by pressing this key you must repeat all previous calibrations)

Exit from hidden menu.




ENTER
Up-Down
2oAL
ENTER
128
Up-Down
ES.
121
ENTER
ZOOM ALIGNMENT
To align zoom
Up-Down
EFAL
ENTER
128
Up-Down
ES.
121
ENTER
EFFECTS ALIGNMENT
To align effects wheel
Up-Down
rEAL
ENTER
128
Up-Down
ES.
121
ENTER
EFFECTS INDEX ALIGNMENT
To align effects wheel index
Up-Down
,rAL
ENTER
128
Up-Down
ES.
121
ENTER
IRIS ALIGNMENT
To align iris
Up-Down
CYAL
ENTER
128
Up-Down
ES.
121
ENTER
CYAN ALIGNMENT
To align cyan
Up-Down
nAAL
ENTER
128
Up-Down
ES.
121
ENTER
MAGENTA ALIGNMENT
To align magenta
Up-Down
YEAL
ENTER
128
Up-Down
ES.
121
ENTER
YELLOW ALIGNMENT
To align yellow

11- Opening up the projector housing

It is possible to inspect the inside of the projector by removing the cover as indicated below.

Attention

REMOVE MAINS POWER PRIOR TO ACCESSING THE PROJECTOR'S INTERNAL COMPONENTS.

1) Loosen the screws which fix the side covers (photo 1 and 2) .
2) Once unscrewed, simply lift the covers to access the internal components (photo 3).

Photo 1

Photo 2

Photo 3

12- Replacing gobos

XM2500 uses a mechanical system which allows the fixture's gobos to be removed without the use of special tools. Replacement gobos should be made of either heat resistant glass or metal.
An ever-increasing range of gobos is available from your D.T.S. sales network.
Gobo dimensions are as follows:
ø external = 37 mm
ø of image with defined edge = 32 mm
thickness = from 0.2 to 3.5 mm (see catalogue)

Replacing gobos on the rotating gobo wheels

When replacing gobos, ensure that the projector is switched off.
1) Open the projector housing as described above.
2) Remove the gobo holder to allow easier access to the gobo (photo 1-2).
3) Release the gobo retaining spring and carefully remove the gobo (photo 3).
4) Reverse the procedure to install a replacement gobo.

Photo 1 (gobo wheel 1)

Photo 2 (gobo wheel 2)

Photo 3

13 Periodic cleaning

Lenses and reflectors

Even a fine layer of dust can reduce the luminous output substantially. Regularly clean all lenses and the reflector using a soft cotton cloth, dampened with a specialist lens cleaning solution.

Fans and air passages

The fans and air passages must be cleaned approximately every 6 weeks. This periodic cleaning will depend, of course, on the conditions in which the projector is operating. Suitable instruments for performing this type of maintenance are a brush and a common vacuum cleaner or an air compressor. If necessary, clean the fans and air passages more frequently.

Periodic controls

Lamp

The lamp should be replaced if there is any visible damage or deformation due to heat. This will help to avoid the danger of the lamp exploding.

Mechanical parts

Periodically check all mechanical parts, gears, guides, belts, etc.for wear and tear, replacing them if necessary. Periodically check the lubrication of all components, particularly the parts subject to high temperatures. If necessary, lubricate with suitable lubricant, available from your D.T.S. distributor. Check the tension of the belts and adjust it if necessary.

Electrical components

Check all electrical components for correct earthing and proper connection of all connectors, refastening if necessary.

Fuse replacement

Locate the fuse, which protects the lamp and electronics, in the base of the XM2500.
Using a multimeter, test the condition of the fuse, replacing it with one of equivalent type if necessary.

Attention

Disconnect mains power prior to removing the projector housing.

14- CONTROL MOTORS CAR

Display

8 MOTORS PCB "1

Magnetic Sensors
Line 1 Brown
Line 2 Orange

GND
ORANGE
BROWN
VCC

Electronic sensors lamp&temp

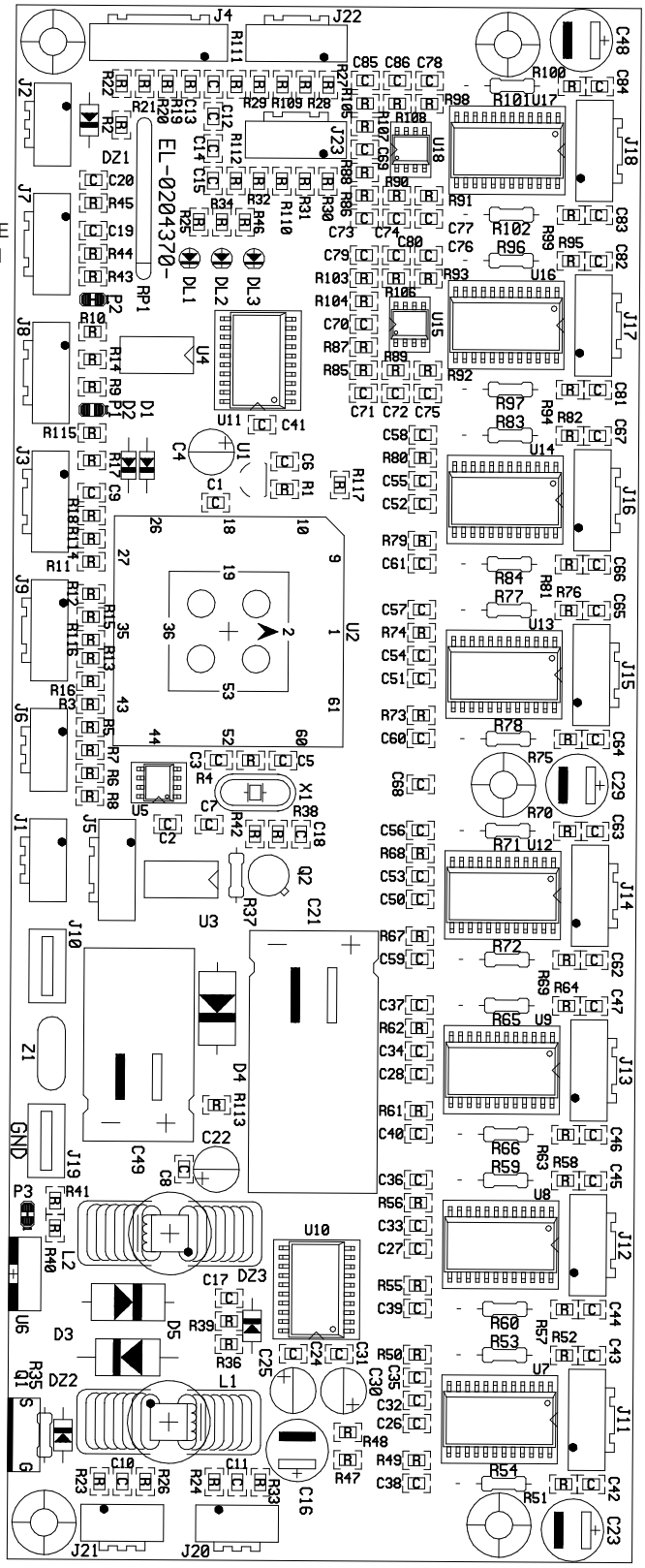
TEMP
GND
LIGHT
GND

J3 FROM
J8 PAN & TILT

J9 FROM
J2 TCN0108

J5 FROM
J10 PAN & TILT

+
30 VDC
-



Gobo1 (line 2)
(BLACK)

Gobo1 Rot. (Line 1)
(DARK GREEN)

Strobe
(YELLOW)

Yellow (line 1)
(PINK)

Free

Colours (line 2)
(LIGHT BLUE)

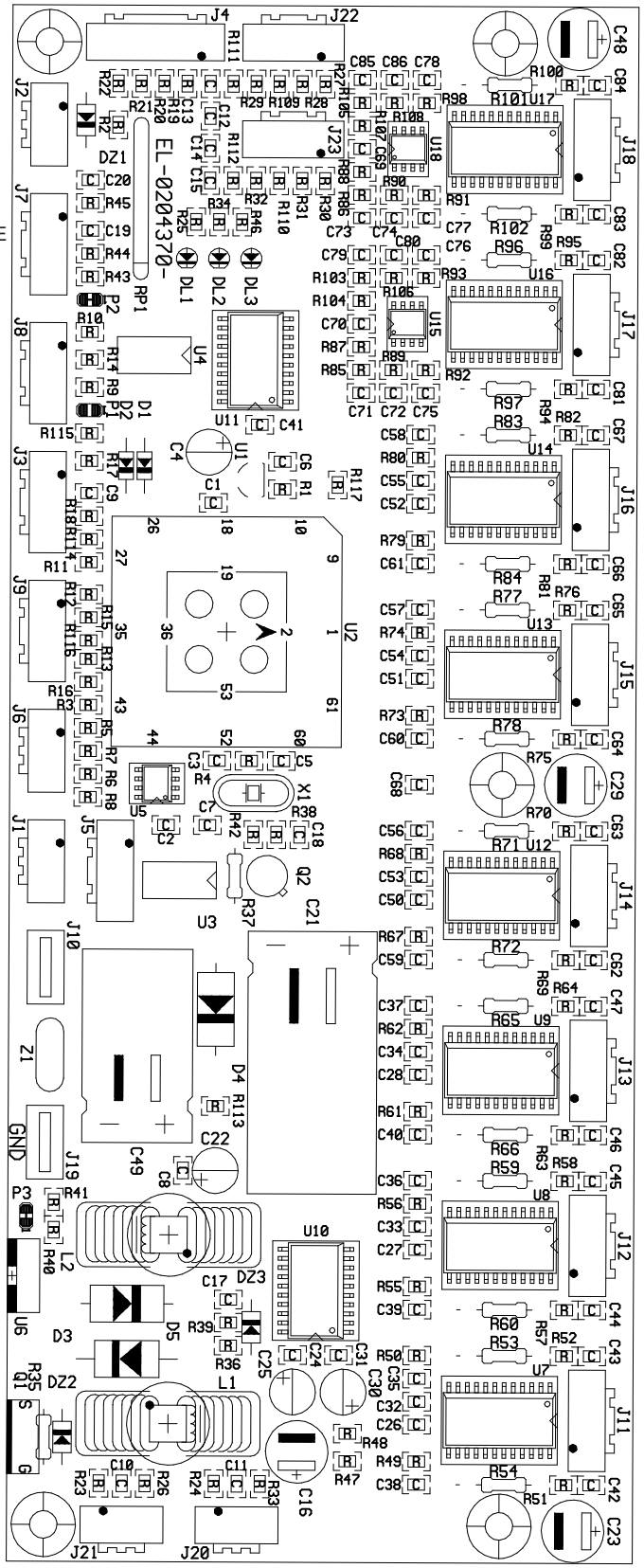
Cyan (Line 1)
(GOLD)

Magenta (line 1)
(BLUE)

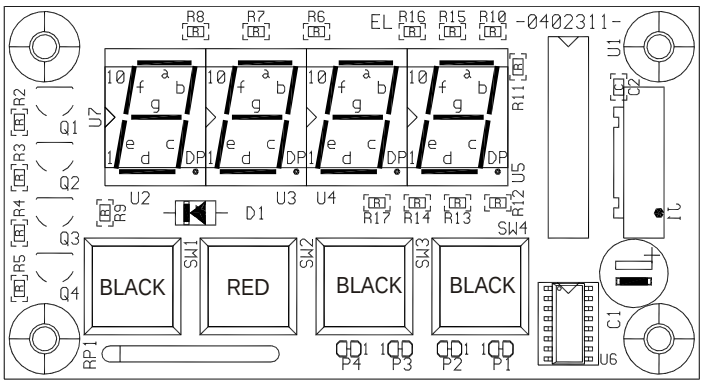
Fans

14- CONTROL MOTORS CAR

8 MOTORS PCB "2"



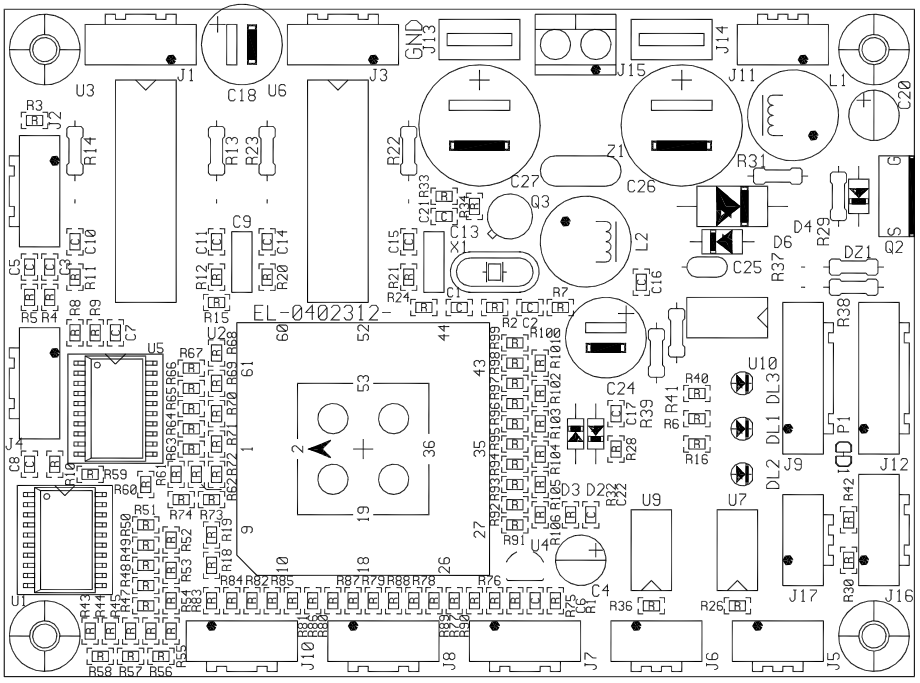
15-DISPLAY CARD



FROM J4
8 MOTORS CARD

16-PAN & TILT CARD

PAN (WHITE) TILT (BROWN) GND (BLACK) 30 VDC (RED) FAN (B/W)



ENCODER PAN (RED)

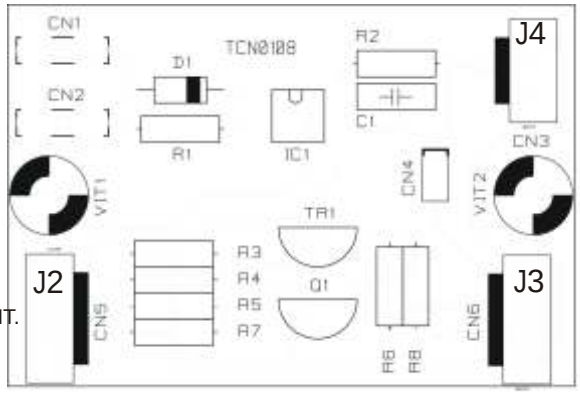
ENCODER TILT (ORANGE)

FROM J5
8 MOTORS
(LIGHT GREEN)

FROM J3
8 MOTORS
(VIOLET)

DMX IMPUT
(WHITE)

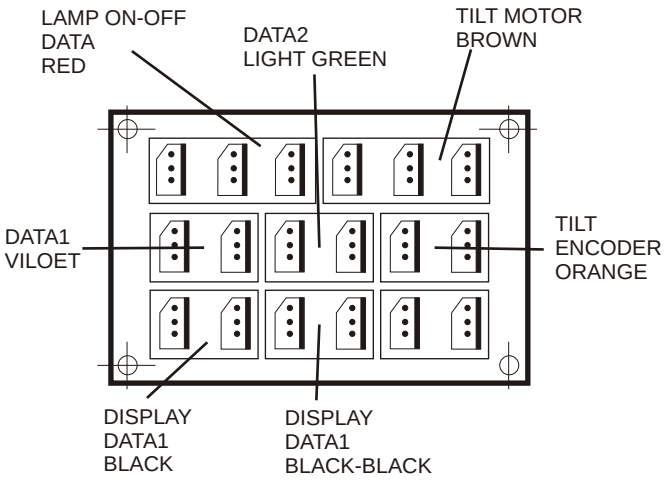
17-LAMP ON-OFF CONTROL CARD



FROM J9
8 MOT CONT.
CARD 1

TO J9
ELECTRONIC
BALLAST

18-CABLES RESEND CARD



19- DMX PROTOCOL

18 CHANNELS MODE

1 PAN msb 540°
2 PAN lsb
3 TILT msb 270°
4 TILT lsb
5 DIMMER
6 SHUTTER
7 COLOUR
8 COLOUR MACROS
9 GOBO 1
10 GOBO 1 ROTATION/INDEX
11 GOBO 2
12 GOBO 2 ROTATION/INDEX
13 IRIS
14 EFFECTS
15 EFFECTS ROTATION
16 FOCUS
17 ZOOM
18 LAMP ON/OFF - RESET

DMX CHANNEL	**1**	Parameter: **PAN msb**

DMX CHANNEL	**2**	Parameter: **PAN lsb**

DMX CHANNEL	**3**	Parameter: **TILT msb**

DMX CHANNEL	**4**	Parameter: **TILT lsb**

DMX CHANNEL	**5**	Parameter: **DIMMER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-7					**Black-out**
8-255			**Proportional dimmer from Closed to Open**		

DMX CHANNEL	6	Parameter: **SHUTTER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-19					**Black-out**
20-39					**Open**
40-59					**Black-out**
60-79					**Random Strobe**
80-89					**Strobe speed 1 min.**
90-99					**Strobe speed 2**
100-109					**Strobe speed 3**
110-119					**Strobe speed 4**
120-129					**Strobe speed 5**
130-139					**Strobe speed 6 max.**
140-149					**Pulse open speed 1 min.**
150-159					**Pulse open speed 2**
160-169					**Pulse open speed 3**
170-179					**Pulse open speed 4 max.**
180-189					**Pulse closed speed 1 min.**
190-199					**Pulse closed speed 2**
200-209					**Pulse closed speed 3**
210-219					**Pulse closed speed 4 max.**
220-227					**Colour and Gobo in black-out**
228-233					**Pan and Tilt in black-out**
234-255					**Open**

DMX CHANNEL	7	Parameter: **COLOUR**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-10	**5**				**Colour1**
11-21	**16**				**Bicolour ½**
22-32	**27**				**Colour2**
33-43	**38**				**Bicolour 2/3**
44-54	**49**				**Colour3**
55-65	**60**				**Bicolour 3/4**
66-76	**71**				**Colour4**
77-87	**82**				**Bicolour 4/5**
88-98	**93**				**Colour5**
99-109	**104**				**Bicolour 5/6**
110-120	**115**				**Colour6**
121-131	**126**				**Bicolour 6/7**
132-142	**137**				**Colour7**
143-153	**148**				**Bicolour 7/8**
154-164	**159**				**Colour8**

DMX CHANNEL	7	Parameter: **COLOUR**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
165-175	**170**				**Bicolour 8/9**
176-186	**181**				**Colour9**
187-197	**192**				**Bicolour 9/1**
198-200	**199**				**Right rotation speed 1 max.**
201-203	**200**				**Right rotation speed 2**
204-206	**205**				**Right rotation speed 3**
207-209	**208**				**Right rotation speed 4**
210-212	**211**				**Right rotation speed 5**
213-215	**214**				**Right rotation speed 6**
216-218	**217**				**Right rotation speed 7**
219-221	**220**				**Right rotation speed 8**
222-224	**223**				**Right rotation speed 9 min.**
225-228	**226**				**Stop**
229-231	**230**				**Left rotation speed 1 min.**
232-234	**233**				**Left rotation speed 2**
235-237	**236**				**Left rotation speed 3**
238-240	**239**				**Left rotation speed 4**
241-243	**242**				**Left rotation speed 5**
244-246	**245**				**Left rotation speed 6**
247-249	**248**				**Left rotation speed 7**
250-252	**251**				**Left rotation speed 8**
253-255	**254**				**Left rotation speed 9 max.**

DMX CHANNEL	8	Parameter: **COLOUR MACROS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-35	**18**				**No Effect**
36-71	**52**				**Macro 1**
72-107	**90**				**Macro 2**
108-143	**126**				**Macro3**
144-179	**160**				**Macro 4**
180-215	**198**				**Macro 5**
216-255	**232**				**Macro 6**

DMX CHANNEL	9	Parameter: **GOBO 1**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-29	**15**				**Open**
30-59	**45**				**Gobo 1**
60-89	**75**				**Gobo 2**
90-119	**105**				**Gobo 3**
120-149	**135**				**Gobo 4**
150-179	**165**				**Gobo 5**
180-207	**168**				**Gobo 6**
208-213	**210**				**Speed rotation 1 min.**
214-219	**216**				**Speed rotation 2**
220-225	**222**				**Speed rotation 3**
226-231	**228**				**Speed rotation 4**
232-237	**234**				**Speed rotation 5**
238-243	**240**				**Speed rotation 6**
244-249	**246**				**Speed rotation 7**
250-255	**252**				**Speed rotation 8 max.**

DMX CHANNEL	10	Parameter: **GOBO 1 ROTATION/INDEX**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-127					**Index 0° - 360°**
128-185					**Left rotation from fast to slow**
186-197					**Stop**
198-255					**Right rotation from slow to fast**

DMX CHANNEL	11	Parameter: **GOBO 2**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-29	**15**				**Open**
30-59	**45**				**Gobo 1**
60-89	**75**				**Gobo 2**
90-119	**105**				**Gobo 3**
120-149	**135**				**Gobo 4**
150-179	**165**				**Gobo 5**
180-207	**168**				**Gobo 6**
208-213	**210**				**Speed rotation 1 min.**
214-219	**216**				**Speed rotation 2**
220-225	**222**				**Speed rotation 3**
226-231	**228**				**Speed rotation 4**
232-237	**234**				**Speed rotation 5**
238-243	**240**				**Speed rotation 6**
244-249	**246**				**Speed rotation 7**
250-255	**252**				**Speed rotation 8 max.**

DMX CHANNEL	12	Parameter: **GOBO 2 ROTATION/INDEX**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-127					**Index 0° - 360°**
128-185					**Left rotation from fast to slow**
186-197					**Stop**
198-255					**Right rotation from slow to fast**

DMX CHANNEL	13	Parameter: **IRIS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**Open**
10-124					**Linear Iris from Open to Closed**
125-132					**Closed**
133-159					**Iris pulse at different speeds from Min to Max**
160-186					**Iris closing at different speed from Min to Max**
187-214					**Iris openig at different speed from Min to Max**
215-234					**Iris closing combined with Zoom at different speed from Min to Max**
215-234					**Iris openig combined with Zoom at different speed from Min to Max**

DMX CHANNEL	14	Parameter: **EFFECTS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-41					**No effect**
42-83					**Effect 1**
84-125					**Effect 2**
126-167					**Effect 3**
168-209					**Effect 4**
210-255					**Effect 5**

DMX CHANNEL	15	Parameter: **EFFECTS ROTATION/INDEX**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-127					**Index 0°- 360°**
128-180					**Left rotation from Max to Min**
181-202					**Stop**
203-255					**Right rotation from Min to Max**

DMX CHANNEL	**16**	Parameter: **FOCUS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Linear Focus**

DMX CHANNEL	**17**	Parameter: **ZOOM**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Linear Zoom**

DMX CHANNEL	**18**	Parameter: **RESET**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**No Effect**
10-60				**Lamp OFF (activ.after 3 seconds)**	
61-129				**No Effect**	
130-179				**Lamp ON (activ.after 3 seconds)**	
180-200					**No Effect**
201-239					**Internal motor reset**
240-255					**Total Reset**

30 CHANNELS MODE (DEFAULT)

1 PAN msb 540°
2 PAN lsb
3 TILT msb 270°
4 TILT lsb
5 SPEED MOVEMENT
6 DIMMER
7 SHUTTER
8 COLOUR
9 COLOUR MODE
10 CYAN
11 MAGENTA
12 YELLOW
13 COLOUR MACROS
12 GOBO 1
15 GOBO 1 MODE
16 GOBO 1 ROTATION/INDEX COARSE
17 GOBO 1 INDEX FINE 16 bit
18 GOBO 1 SHAKE
19 GOBO 2
20 GOBO 2 MODE
21 GOBO 2 ROTATION/INDEX COARSE
22 GOBO 2 INDEX FINE 16 bit
23 GOBO 2 SHAKE
24 IRIS
25 IRIS MACROS
26 EFFECTS
27 EFFECTS ROTATION
28 FOCUS
29 ZOOM
30 LAMP ON/OFF - RESET

DMX CHANNEL	**1**	Parameter: **PAN msb**

DMX CHANNEL	**2**	Parameter: **PAN lsb**

DMX CHANNEL	**3**	Parameter: **TILT msb**

DMX CHANNEL	**4**	Parameter: **TILT lsb**

DMX CHANNEL	**5**	Parameter: **SPEED MOVEMENT**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-10	**5**				**Standard**
11-25	**18**				**Fast movement**
26-127					**Vector mode from fast to slow**
128-247					**Variable time reaction to DMX signal (fast to slow)**
248-255	**251**				**Slow reaction time to DMX signal**

DMX CHANNEL	6	Parameter: **DIMMER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-8	**4**				**Black-out**
9-255					**Proportional dimmer**

DMX CHANNEL	7	Parameter: **SHUTTER**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-19					**Black-out**
20-39					**Open**
40-59					**Black-out**
60-79					**Random Strobe**
80-89					**Strobe speed 1 min.**
90-99					**Strobe speed 2**
100-109					**Strobe speed 3**
110-119					**Strobe speed 4**
120-129					**Strobe speed 5**
130-139					**Strobe speed 6 max.**
140-149					**Pulse open speed 1 min.**
150-159					**Pulse open speed 2**
160-169					**Pulse open speed 3**
170-179					**Pulse open speed 4 max.**
180-189					**Pulse closed speed 1 min.**
190-199					**Pulse closed speed 2**
200-209					**Pulse closed speed 3**
210-219					**Pulse closed speed 4 max.**
220-227					**Colour and Gobo in black-out**
228-233					**Pan and Tilt in black-out**
234-255					**Open**

DMX CHANNEL	8	Parameter: **COLOUR**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
IF CHANNEL 9 = FULL COLOUR (Dmx range value 0 - 63)					
0-27					**Colour1**
28-55					**Colour2**
56-83					**Colour3**
84-111					**Colour4**
112-139					**Colour5**
140-167					**Colour6**
168-195					**Colour7**
196-223					**Colour8**
224-255					**Colour9**

DMX CHANNEL	8	Parameter: **COLOUR 1**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
IF CHANNEL 9 = HALF COLOUR (Dmx range value 64 - 127)					
0-25					**No Colour**
26-51					**Bicolour ½**
52-77					**Bicolour 2/3**
78-103					**Bicolour 3/4**
104-129					**Bicolour 4/5**
130-155					**Bicolour 5/6**
156-181					**Bicolour 6/7**
182-207					**Bicolour 7/8**
208-233					**Bicolour 8/9**
234-255					**Bicolour 9/1**
IF CHANNEL 9 = PROPORTIONAL COLOUR (Dmx range value 128 - 191)					
0-10					**No Colour**
11-255					**Proportional colour**
IF CHANNEL 9 = RAINBOW (Dmx range value 192 - 255)					
0-9					**No Colour**
10-127					**Right Rot.Speed from Max to Min**
128-137					**Stop**
138-255					**Left Rot.speed from Min to Max**

DMX CHANNEL	9	Parameter: **COLOUR MODE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-63					**Full Colour**
64-127					**Half Colour**
128-191					**Proportional Colour**
192-255					**Rainbow**

DMX CHANNEL	10	Parameter: **CYAN**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional Colour**

DMX CHANNEL	11	Parameter: **MAGENTA**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional Colour**

DMX CHANNEL	12	Parameter: **YELLOW**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Proportional Colour**

DMX CHANNEL	13	Parameter: **COLOUR MACROS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9	**5**				**No Effect**
10-44	**28**				**Macro 1**
45-79	**64**				**Macro 2**
80-114	**96**				**Macro3**
115-149	**134**				**Macro 4**
150-184	**168**				**Macro 5**
185-219	**204**				**Macro 6**
220-255	**238**				**Macro 7**

DMX CHANNEL	14	Parameter: **GOBO 1**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-29	**15**				**Open**
30-59	**45**				**Gobo 1**
60-89	**75**				**Gobo 2**
90-119	**105**				**Gobo 3**
120-149	**135**				**Gobo 4**
150-179	**165**				**Gobo 5**
180-207	**168**				**Gobo 6**
208-213	**210**				**Speed rotation 1 min.**
214-219	**216**				**Speed rotation 2**
220-225	**222**				**Speed rotation 3**
226-231	**228**				**Speed rotation 4**
232-237	**234**				**Speed rotation 5**
238-243	**240**				**Speed rotation 6**
244-249	**246**				**Speed rotation 7**
250-255	**252**				**Speed rotation 8 max.**

DMX CHANNEL	15	Parameter: **GOBO 1 MODE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-127					**Gobo Rotation Mode**
128-255					**Gobo Index Mode**

DMX CHANNEL	**16**	Parameter: **GOBO 1 ROTATION/GOBO 1 INDEX COARSE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
IF CHANNEL 15 = Gobo Rotation Mode (Dmx range value 0 - 127)					
0-9					**Stop**
10-127					**Right Rot. Prop. Speed Max to Min**
128-137					**Stop**
138-255					**Left Rot. Prop. Speed Min to Max**
IF CHANNEL 15 = Gobo Index Mode (Dmx range value 128 - 255)					
0-255					**Gobo index Coarse**

DMX CHANNEL	**17**	Parameter: **GOBO 1 INDEX FINE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Gobo Index Fine**

DMX CHANNEL	**18**	Parameter: **GOBO 1 SHAKE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**Stop**
10-22					**Gobo Shake R-L Speed 1 Min.**
23-35					**Gobo Shake R-L Speed 2**
36-48					**Gobo Shake R-L Speed 3**
49-61					**Gobo Shake R-L Speed 4**
62-74					**Gobo Shake R-L Speed 5**
75-87					**Gobo Shake R-L Speed 6**
88-100					**Gobo Shake R-L Speed 7**
101-113					**Gobo Shake R-L Speed 8**
114-126					**Gobo Shake R-L Speed 9 Max**
127-138					**Stop**
139-151					**Gobo Shake L-R Speed 1 Min**
152-164					**Gobo Shake L-R Speed 2**
165-177					**Gobo Shake L-R Speed 3**
178-190					**Gobo Shake L-R Speed 4**
191-203					**Gobo Shake L-R Speed 5**
204-216					**Gobo Shake L-R Speed 6**
217-229					**Gobo Shake L-R Speed 7**
230-242					**Gobo Shake L-R Speed 8**
243-255					**Gobo Shake L-R Speed 9 Max**

DMX CHANNEL	19	Parameter: **GOBO 2**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-29	**15**				**Open**
30-59	**45**				**Gobo 1**
60-89	**75**				**Gobo 2**
90-119	**105**				**Gobo 3**
120-149	**135**				**Gobo 4**
150-179	**165**				**Gobo 5**
180-207	**168**				**Gobo 6**
208-213	**210**				**Speed rotation 1 min.**
214-219	**216**				**Speed rotation 2**
220-225	**222**				**Speed rotation 3**
226-231	**228**				**Speed rotation 4**
232-237	**234**				**Speed rotation 5**
238-243	**240**				**Speed rotation 6**
244-249	**246**				**Speed rotation 7**
250-255	**252**				**Speed rotation 8 max.**

DMX CHANNEL	20	Parameter: **GOBO 2 MODE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-127					**Gobo Rotation Mode**
128-255					**Gobo Index Mode**

DMX CHANNEL	21	Parameter: **GOBO 2 ROTATION/GOBO 2 INDEX COARSE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
IF CHANNEL 20 = Gobo Rotation Mode (Dmx range value 0 - 127)					
0-9					**Stop**
10-127					**Right Rot. Prop. Speed Max to Min**
128-137					**Stop**
138-255					**Left Rot. Prop. Speed Min to Max**
IF CHANNEL 20 = Gobo Index Mode (Dmx range value 128 - 255)					
0-255					**Gobo index Coarse**

DMX CHANNEL	22	Parameter: **GOBO 2 INDEX FINE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Gobo Index Fine**

DMX CHANNEL	23	Parameter: **GOBO 2 SHAKE**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**Stop**
10-22					**Gobo Shake R-L Speed 1 Min.**
23-35					**Gobo Shake R-L Speed 2**
36-48					**Gobo Shake R-L Speed 3**
49-61					**Gobo Shake R-L Speed 4**
62-74					**Gobo Shake R-L Speed 5**
75-87					**Gobo Shake R-L Speed 6**
88-100					**Gobo Shake R-L Speed 7**
101-113					**Gobo Shake R-L Speed 8**
114-126					**Gobo Shake R-L Speed 9 Max**
127-138					**Stop**
139-151					**Gobo Shake L-R Speed 1 Min**
152-164					**Gobo Shake L-R Speed 2**
165-177					**Gobo Shake L-R Speed 3**
178-190					**Gobo Shake L-R Speed 4**
191-203					**Gobo Shake L-R Speed 5**
204-216					**Gobo Shake L-R Speed 6**
217-229					**Gobo Shake L-R Speed 7**
230-242					**Gobo Shake L-R Speed 8**
243-255					**Gobo Shake L-R Speed 9 Max**

DMX CHANNEL	24	Parameter: **IRIS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**Closed**
10-246					**Linear Iris from Open to Closed**
247-255					**Open**

DMX CHANNEL	25	Parameter: **IRIS MACROS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**No effect**
10-63					**Iris pulse at different speeds from Max to Min**
64-117					**Iris pulse with flash closing from Min to Max**
118-171					**Iris pulse with flash opening from Min to Max**
172-213					**Iris pulse with flash closing combined with Zoom from Min to Max**
214-255					**Iris pulse with flash opening combined with Zoom from Min to Max**

DMX CHANNEL	26	Parameter: **EFFECTS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-41					**No effect**
42-83					**Effect 1**
84-125					**Effect 2**
126-167					**Effect 3**
168-209					**Effect 4**
219-255					**Effect 5**

DMX CHANNEL	27	Parameter: **EFFECTS ROTATION/INDEX**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-127					**Index 0°- 360°**
128-180					**Left rotation from Min to Max**
181-202					**Stop**
203-255					**Right rotation from Min to Max**

DMX CHANNEL	28	Parameter: **FOCUS**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Linear Focus**

DMX CHANNEL	29	Parameter: **ZOOM**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-255					**Linear Zoom**

DMX CHANNEL	30	Parameter: **RESET**

DMX range Value	Mid point DMX value	Move range (degrees)	Mode	Option	Function
0-9					**No Effect**
10-60					**Lamp OFF (activ.after 3 seconds)**
61-129					**No Effect**
130-179					**Lamp ON (activ.after 3 seconds)**
180-200					**No Effect**
201-239					**Internal motor reset**
240-255					**Total Reset**

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The Lighting Company

D.T.S. Illuminazione s.r.l - Via Fagnano Selve 10-12-14 47843 - Misano Adriatico (RN) Italy
Tel. +39 0541 611131 Fax +39 0541 611111 info@dts-lighting.it www.dts-lighting.it